



# UNITED STATES PATENT AND TRADEMARK OFFICE

8  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,828	10/20/2005	Kazuhide Hasebe	33082M286	3997
441	7590	06/22/2007	EXAMINER	
SMITH, GAMBRELL & RUSSELL 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036				KORNAKOV, MIKHAIL
ART UNIT		PAPER NUMBER		
1746				
MAIL DATE		DELIVERY MODE		
06/22/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/553,828	HASEBE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Michael Kornakov	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 27 March 2007.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-7 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-7 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____.

Art Unit: 1746

## DETAILED ACTION

1. Claims 1, 5, 6 are amended to emphasize that a mixed gas of HF gas and NH<sub>3</sub> gas is supplied into the treatment vessel. Claims 1-7 are pending and examined on the merits.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 1746

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP1-286424.

JP'424 teaches CVD chamber treatment process, which comprises the step of removing residuals from chamber surfaces upon depositing a film. The residuals are removed with heated up to 100°C and atomized mixture of HF and NH<sub>3</sub> (reads on "mixed gas", as instantly claimed) under vacuum conditions (pages 2, 3; Abstract). JP'424 remains silent about the specificities of deposited film. However, with regard to claim 1, since SiH<sub>4</sub> and O<sub>2</sub> are indicated as ingredients for forming the film (page 3, left column), formation of SiO<sub>2</sub> film is reasonably expected within the teaching of JP'424. Furthermore, it is noted that nature of the film(s) indicated in the preamble(s) of the instant claim(s) apparently does not affect the cleaning process per se. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps are able to stand alone, consult In re Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976). Therefore, one skilled in the art would have found obvious to remove residuals from chamber surfaces upon deposition films, including films as instantly claimed, utilizing the method of JP'424 with the reasonable expectation of success.

6. Claims 3, 4, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP1-286424 in view of JP08-195381 and Goto et al (U.S. 6,880,561).

While teaching a chamber cleaning process comprising the steps similar to the instantly claimed, JP'424 does not specifically indicate a treatment pressure being equal to or more than 400 Torr and the amount of HF being equal to or more than a supply amount of NH<sub>3</sub>. It is noted that JP'424 teaches depositing a film utilizing SiH<sub>4</sub> and O<sub>2</sub> (page 3, left column). Therefore, accumulating SiO<sub>2</sub> as residuals on chamber surfaces and removal of such SiO<sub>2</sub> residuals with the mixture of HF and NH<sub>3</sub> is reasonably expected within the teaching of JP'424. JP'381 teaches etching (removing) SiO<sub>2</sub> and BSG films with the mixture of HF and NH<sub>3</sub>. JP'381 specifically discloses that the etching rate of SiO<sub>2</sub> film can be controlled by controlling the flow rate of NH<sub>3</sub>, thus indicating that relative amounts of HF and NH<sub>3</sub> in gas mixture are result effective. It is noted that JP'381 teaches etching a SiO<sub>2</sub> film deposited on a substrate rather than on chamber surfaces. However, Goto discloses cleaning a processing chamber, wherein cleaning conditions have been obtained by experimenting on substrates (col. 5, lines 31-36). Therefore, with regard to claims 4 and 7, one skilled in the art motivated by JP'381 and Goto, would have found obvious to adjust the relative amounts of HF and NH<sub>3</sub> in the processing mixture in order to obtain desirable cleaning rate in the teaching of JP'424. With regard to claim 3, it is noted that the treatment pressure also affects the cleaning efficiency. The processing pressure of about 500 Torr or less is disclosed by JP'381 while removing of SiO<sub>2</sub> film with the mixture of HF and NH<sub>3</sub>.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Kornakov  
Primary Examiner  
Art Unit 1746



06/19/2007